REMARKS

This paper is responsive to the Final Office Action dated January 9, 2006 ("Final Office Action").

Claims 1-46 are pending. No amendments have been made in this paper.

Claims 1-46 stand rejected.

Claims 1-46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,026,077 issued to Iwata ("*Iwata*") in view of U.S. Patent No. 5,832,197 issued to Houji ("*Houji*"). Applicant offers that the claims are allowable and respectfully requests reconsideration of the pending rejections in view of the following remarks.

Rejections Under 35 U.S.C. § 103(a)

Applicants respectfully submit that *Iwata*, even in light of *Houji* and/or the level of skill in the art at the time of invention, taken alone or in any permissible combination, fail to show, teach or suggest the claimed invention. For example, independent claim 1, as amended, reads as follows:

1. A method for restoring a path in a communication system between zones comprising:
   establishing an inter-zone link between a first border node of a source zone and a second border node of a destination zone;
   identifying an inter-zone link failure between the source zone and the destination zone;
   identifying a pre-planned alternative route, where the pre-planned alternative route meets class of service requirements between the source zone and the destination zone;
   informing a node in the destination zone of the pre-planned alternative route;
   informing a node in the source zone of the pre-planned alternative route; and
   providing communication between the destination zone and the source zone via the pre-planned alternative route.

Applicant respectfully submits that the cited art does not teach, describe, or suggest the Applicant's **identifying a pre-planned alternative route that meets class of service requirements between the source zone and the destination zone**. The Final Office Action cites *Houji* as teaching this limitation. The cited portions of *Houji* include a description of four available paths that can be used to reach between a pair of nodes.

In particular, *Houji* explains:

> In the illustrated example, there are four available paths P1 to P4 that can be used to reach from node N1 to node N5, with P1 extending through node N2, P2 through nodes N2 and N4, P3 through nodes N3, N7 and N4, and P4 through nodes N3 and N7. In addition, each signaling message contains an indication that the QOS parameter of each possible path is of the lowest value. Although multiple paths are reserved for a single connection request, the network resource occupied by the source user U1 is kept small because of the minimum QOS value of the reserved paths.
>
> At step 22, node N1 determines whether acknowledgment messages are received from the network. If such acknowledgment messages are received, it is determined that the requests from node N1 are accepted by intermediate nodes N2, N3, N4 and N7, and flow proceeds from step 22 to step 23 where node N1 establishes paths P1 to P4 of the minimum QOS value to the destination node N5.
>
> At step 24, source node N1 selects one of the established paths, and sends a signaling message to one of more nodes located on the selected path in order to request that the QOS parameter of the selected path be increased from the minimum value to the user-specified value. If path P1 is selected, the signaling message will be sent to node N2. Flow proceeds to step 25 to determine whether the request from node N1 is accepted by node N2. If it is, flow proceeds from step 25 to step 26 to establish a connection between source user terminal U1 and destination user terminal U2 via the selected path P1, and terminate the connection establishment routine.

Houji, col. 2 line 66—col. 3 line 27.

As can be seen from the above passage, although multiple paths may be reserved for a single connection request in *Houji*, the cited reference only teaches that one of these paths, such as path P1 in the above-cited passage, is established with a desired QOS (quality of service) parameter. The QOS parameter for this one path is increased from a minimum value for the system to the desired user-specified value. This one path then serves as the main communications path between the nodes N1 and N5. The remaining paths are reserved as spare backup paths in the event of a link failure along the main path. However, these spare paths are reserved with only the minimum QOS value. No attempt is suggested in the *Houji* for pre-planning an alternative route to meet any class of service requirements.

FIG. 3A of *Houji* further illustrates that the spare paths in *Houji* are not reserved with an appropriate QOS parameter. This figure, reproduced below, is referenced in the cited portion of the reference.

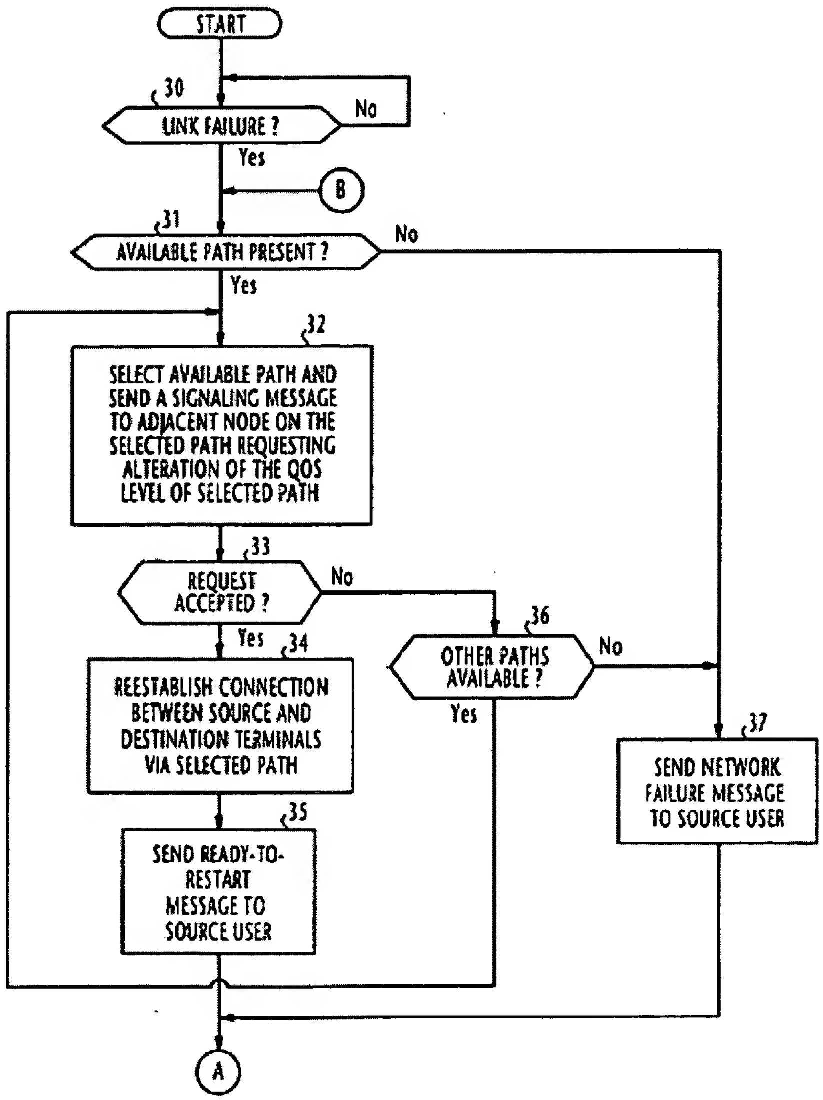

FIG. 3A of *Houji*

FIG. 3A illustrates a switching protection routine that may be used during operation of a network. It begins at step 30 when a link failure occurs. As may be seen from the figure, and as described in the cited portions of the reference, the *Houji* system checks in step 31 to see if any reserved spare paths are normal and available for use. The next steps clearly indicate that the reserved paths are not reserved or pre-planned with a required QOS parameter. Rather, the reserved spare paths in *Houji* need to be examined during the switching routine—*after* the link failure occurs—to see if they can support a user-specified QOS value.

After selecting one of the available spare paths, the *Houji* system sends a signaling message in step 32 on the selected path requesting the alteration of its QOS parameter from the minimum value to the user-specified value. This request is necessary since the selected spare path in *Houji* is not pre-established with the desired user-specified value of the QOS parameter.

The discussion of FIG. 3A also indicates that it is possible that the selected available spare path will fail to support the user-specified value of the QOS parameter. In step 33, the *Houji* system queries whether the QOS request is accepted. One illustrated possibility is that the request may fail. This illustration highlights the fact that *Houji* does not perform a prior testing of the spare paths to ensure that they meet any QOS requirements.

Acknowledging the possibility that the request may fail, the diagram in FIG. 3A includes step 36, which loops the *Houji* procedure back to step 31 in an attempt to seek yet another candidate spare path. This looping and repeated testing in further clarifies that the *Houji* system requires on-the-fly searching to find an appropriate path after a failure occurs.

In contrast, various implementations of the Applicant's claimed invention may be used to avoid such searching by using a pre-planned alternative route that meets class of service requirements between the source zone and the destination zone, as set forth in claim 1. Such a route may be used, as set forth in Applicant's claim 1, to provide communication between the destination zone and the source zone while restoring a path in a communication system.

Various implementations of the Applicant's invention may use such pre-planned alternative routes to quickly enable a replacement of a failed inter-zone route with a ready alternative route. Since the Applicant's pre-planned alternative route is known to meet the appropriate class of service requirements from the time that this route is identified, it may be possible to skip class-of-service testing after detecting a failure. The replacement of a failed route may thus be carried out comparatively quickly. A procedure for replacing the failed path may not require testing of the class of service capabilities, since the class of service requirements are checked at the time that the Applicant's alternative route is initially identified. By allowing the recovery procedure to skip such testing, the Applicant's procedure may be used to enable more rapid recoveries from path failures.

Such testing may not be skipped in systems such as *Houji*, where no prior testing is done to ensure that a spare path meets a desired class of service requirement. Without this testing, such systems may lack various advantages in some implementations of Applicant's invention. This difference arises because systems such as *Houji* lack the limitation of identifying a pre-planned alternative route that meets class of service requirements between the source zone and the destination zone.

Since this limitation is not disclosed in the cited references, Applicant respectfully submits that independent claim 1 and all claims dependent therefrom are allowable under § 103(a). At least for similar reasons, independent claims 9, 17, 25, and 33 and all claims dependent therefrom are also allowable under § 103(a).

Independent claim 41 also includes various limitations that are not disclosed in the cited art. Claim 41 reads as follows.

> 41. (Previously presented) A method for restoring a path in a communication system between zones comprising:
> establishing an inter-zone link with a first border node of a source zone with a second border node of a destination zone;
> identifying an inter-zone link failure between the source zone and the destination zone;
> identifying a pre-planned alternative route;
> informing a node in the destination zone of the pre-planned alternative route;
> informing a node in the source zone of the pre-planned alternative route;
> providing communication between the destination zone and the source zone via the pre-planned alternative route;
> identifying an intra-zone failure within at least one of said source zone and said destination zone; and
> dynamically identifying an alternative route using a distributed restoration process associated with said at least one of said source zone and said destination zone.

Claim 41 includes a limitation of **identifying an intra-zone failure within at least one of said source zone and said destination zone**. This limitation relates to a in *intra*-zone failure that is in addition to an *inter*-zone link failure. Applicant respectfully submits that this limitation is not disclosed in the cited references.

The Final Office Action proposes that the link state database 102 from FIGS. 2-6 of *Iwata* teaches the identification of an intra-zone failure. Applicant respectfully disagrees.

The link state database 102 in *Iwata* is not related to the identification of intra-zone failures. *Iwata* describes this database as being included in a node control unit. *Iwata* at col. 5 lines 5-19. With regard to the function of this database, *Iwata* discloses that the database 102 operates in conjunction with the link state routing protocol unit 101.

> The link state routing protocol unit 101 is essential protocol means for the conventional PNNI routing protocol. The link state routing protocol unit 101 exchanges hello messages with neighboring physical nodes. The link state routing protocol unit 101 thus determines whether a given link is acceptable and/or desirable for carrying a given connection between the physical node where it locates and the adjacent neighbor physical nodes. A notification is flooded throughout the same peer group. The notification contains appropriate information about a bandwidth and delay in the physical link between the adjacent physical nodes. As a result of the flooding, all the physical nodes within the same peer group note the connection topology information for all physical nodes. Likewise, the node which has been elected to perform some of the functions associated with a logical node at a higher level in the same peer group exchanges the hello message with the adjacent neighbor logical node within the peer group PG-X at a higher level or hierarchy. The elected node floods or disseminates the link state parameters for discovered adjacent neighbor topology information and a lower level or hierarchy in a compressed format. The elected node disseminates such information to the logical nodes within the peer group PG-X at the higher level. This allows the logical nodes within the peer group PG-X at the higher level to discover the connection topology information for all logical nodes. The connection topology information is flooded among all logical nodes within the peer groups at the lower level. The above-mentioned operation is repeated recursively for all levels of the hierarchy to exchange the hierarchical link state parameters. *The link state parameters captured by the link state routing protocol unit 101 in the manner described above are stored in the link state database 102.*

Iwata at col. 5 lines 23-55 (emphasis added).

According to *Iwata*, the link state database 102 stores link state parameters captured by the link state protocol. In other portions of *Iwata*, these parameters are then used during the computation of routes. However, as may be seen from the above-quoted passage, *the link state parameters in the database 102 are not based on an identification of an intra-zone failure.* Further, these parameters are captured by the link state routing protocol unit 101 are gathered during regular healthy operation of the *Iwata* system: they are not indicative of failures, and in particular, they are not collected in response to an intra-zone failure.

This point may also be seen in *Iwata*'s description of the link state parameters that are stored in the link state database 102. According to *Iwata*, the parameters include "information about a bandwidth of a link and delay to discover a hierarchical topology." *Iwata* at col. 2 lines 13-22. None of this stored information in the link state database 102 reflects the identification of an intra-zone failure. Accordingly, the link state database 102 in *Iwata* does not teach the identifying of an intra-zone failure within at least one of a source zone and a destination zone. Applicant also sees no other aspect of the cited references that disclose this limitation.

Since this limitation is not disclosed in the cited references, Applicant respectfully submits that independent claim 41 and all claims dependent therefrom are allowable under § 103(a). At least for similar reasons, independent claims 44 and 46 and all claims dependent therefrom are also allowable under § 103(a).

Still further, a person having ordinary skill in the art would have a motivation to make the combination of *Iwata* and *Houji* as proposed in the Final Office Action. According to the Final Office Action, the motivation for making this combination would be to provide a feature that "performs alternate routing and avoids congestion without interrupting a connection." Final Office Action at 3. However, there is nothing in either reference (nor, in fact, in the skill in the art at the time of invention) that shows, teaches or even suggests that *Houji*'s use of QOS parameters would be particularly desirable in the setting described in *Iwata*. To suggest otherwise would be to use the Applicants' claims as a blueprint for such a rejection, and so employ impermissible hindsight.

In fact, Applicant respectfully submits that the discussion in *Iwata* is oblivious to any need for QOS considerations or for any other techniques taught in *Houji*. Neither reference includes a showing, teaching, or suggestion that one of skill in the art should look elsewhere for other restoration techniques to supplement the teachings of the individual references. *Iwata* is quite self-contained in this regard. In a similar manner, *Houji* is similarly self-contained, providing a standalone restoration technique that would find no benefit from *Iwata* that would be particularly applicable to *Houji*'s disclosed restoration technique.

In particular, the motivation proposed in the Final Office Action would not lead a person having ordinary skill in the art to make the proposed combination, because *Houji* itself discusses techniques to adequately perform alternate routing to avoid congestion without interrupting a connection. The discussion in *Houji* sets forth this goal (*Houji* at col. 1 lines 20-30) and then describes techniques for achieving such routing, with the additional goal of avoiding the reservation of significant amounts of network resources for each connection (*id.*). For example, such techniques are adequately set forth with the use of established paths with a minimum QOS value (*id.* at col. 2 line 66—col. 3 line 15), supplemented by an after-failure request for the alteration of a QOS parameter from the minimum value to a user-specified value (*id.* at col. 3 line 51—col. 4 line 4). Thus, a person having ordinary skill in the art would not have any motivation to supplement this teaching from *Houji* with the material of *Iwata*. For this reason as well, the claims are allowable under § 103(a).

CONCLUSION

Applicant submits that all claims are now in condition for allowance, and an early notice to that effect is earnestly solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia, 22313-1450, on May 10, 2006.

Cyrus Bharucha — 2006 MAY 10

Attorney for Applicant — Date of Signature

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